

REMARKS

Claims 1, 3, 4, 6, 7, 9 and 11-18 are pending. Claims 1, 3, 4, 6, 7, 9 and 11-18 stand rejected. In view of the remarks below, Applicants respectfully request that the rejections be withdrawn and the claims be allowed.

Claims 1, 3, 4, 6, 7 and 9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication No. 2002/0026540 to Smyers ("Smyers") in view of U.S. Patent No. 7,251,747 to Bean et al. ("Bean") and in view of U.S. Patent Application Publication No. 2003/0061342 to Abdelhadi et al. ("Abdelhadi"). The rejection is respectfully traversed.

The Examiner asserts that Smyers "discloses identifying a target volume based on its capacity." Office Action, p. 31. The Examiner also asserts that "Abdelhadi discloses a system requesting task execution status in the abstract, wherein such request corresponds to the claimed 'command.'" *Id.* The Examiner concludes that these two teachings "disclose a command identifying a target volume based on its capacity." Office Action, p. 32. Applicants disagree. The Abdelhadi status request has nothing to do with the recited host command. Additionally, in Smyers, identification of a target volume is not performed by the command. Therefore, as explained below, neither Smyers, Abdelhadi nor Bean teach the recited host command.

Claim 1 relates to a "method for processing a host command in a storage system including a plurality of storage elements coupled to a plurality of storage controllers." The method includes "receiving from a host a host command identifying a volume of said storage system to which the host command is directed," the host command received "at a first one of said plurality of storage controllers." Additionally, the host command is executed and an execution status is forwarded to the host. The method also includes "determining a target storage element of said storage system corresponding to said volume."

Smyers fails to teach the receipt of a host command that identifies a volume of said storage system to which the host command is directed. In Smyers, a selected audio/video hard disk drive ("AVHDD") receives recording commands (i.e., the commands to be executed) from the

controller 80 (or alternatively, the computer 20 or settop box 26). Smyers, ¶¶ [0029], [0032], [0033]. However, the received commands are not directed towards a target volume. Instead, the selected AVHDD “determines which one of the available AVHDDs within the network should record the next stream of data. This determination is based on the available capacity of each of the available AVHDDs and the current responsibilities of those AVHDDs.” Smyers, ¶ [0033]. The determination is not based on an identification in the received host command. No where in Smyers are the received host commands taught to include an identified target volume. In fact, Smyers teaches away from this limitation. “[I]t does not matter which one of the AVHDDs 32, 34 and 36, the controller 80 selects and instructs to record.” Smyers, ¶ [0032]. In Smyers, the received commands never identify an AVHDD; identification is performed by the controller.

Neither Bean nor Abdelhadi remedy this inadequacy of Smyers. The Examiner states that Abdelhadi teaches “a system requesting task execution status in the abstract, wherein such request corresponds to the claimed ‘command.’” Office Action, p. 31. However, in claim 1 of the present application, the recited host command is the command to be executed, whose execution status is to be forwarded to the host. In other words, in claim 1 of the present application, the command from the host includes not only a command to be executed but also an identification of which volume upon which the command should be executed. The host command is not a status inquiry regarding the execution of a different command, as suggested by the Office Action. Additionally, while Abdelhadi does teach the execution of commands on specific computers, Abdelhadi fails to teach that the host command itself includes an identification of which volume it is to be executed on. Abdelhadi, ¶ [0030]. Therefore, Abdelhadi fails to remedy Smyers. Abdelhadi teaches only a command that does not identify a volume to which it is directed and a separate request from a remote computer to monitor the status of the command’s execution. Abdelhadi, Abstract.

Bean is equally unhelpful. Bean is relied upon by the Examiner to teach the erasure of “fallback data after use.” Office Action, p. 4. However, Bean is silent regarding the recited “host command identifying a volume of said storage system to which the host command is directed.”

Therefore, for at least these reasons, claim 1 is allowable over the cited combination. Claim 3 depends from claim 1 and is allowable for at least the same reasons that claim 1 is allowable.

Claim 4 also relates to a “method for processing a host command in a storage system including a plurality of storage elements coupled to a plurality of storage controllers.” In claim 4, “a first one of said plurality of storage controllers” receives “from a host a host command identifying a virtual volume of said storage system to which the host command is directed.” As explained above, the cited combination of references fails to teach the receipt of a command that identifies a virtual volume of the storage system. Accordingly, claim 4 is allowable over the cited combination. Claim 6, which depends from claim 4, is also allowable for at least the same reasons that claim 4 is allowable.

Claims 7 and 9 both relate to a storage system that includes a plurality of storage controllers. The “plurality of storage controllers further comprise means for “processing a host command identifying a storage volume of said storage system to which the host command is directed.” As explained above, the cited combination of references fails to teach the receipt of a command that identifies a storage volume of the storage system. Accordingly, claims 7 and 9 are each allowable over the cited combination.

Thus, because the cited combination fails to teach each element and limitation of claims 1, 3, 4, 6, 7 and 9, these claims are allowable over the combination of Smyers, Bean and Abdelhadi. Applicants respectfully request the rejection be withdrawn and the claims be allowed.

Claims 11-16 stand rejected under 35 U.S.C. § 103(a) as being obvious over Smyers in view of U.S. Patent Application Publication No. 2001/0002480 to Dekoning et al. (“Dekoning”), Bean and Abdelhadi. The rejection is respectfully traversed.

Claims 11 and 15 relate to scalable storage controllers that include a plurality of modules. Each module includes a processing element. Claim 11 recites that “the processing

element of each of said modules is configured to search mappings between storage volumes and storage devices and to receive and store a host command received from a host and identifying a storage volume to which the host command is directed.” Claim 15 recites that “the processing element of each of said modules is configured to process a host command received from a host identifying a virtual volume to be accessed by the host command.” As explained above, neither Smyers, Bean nor Abdelhadi teach the recited limitations. Additionally, Dekoning fails to remedy the inadequacies of Smyers, Bean and Abdelhadi. Therefore, claims 11 and 15 unpatentable are allowable over the cited combination. Claims 12-14 depend from claim 11, and are thus allowable for at least the same reasons claim 11 is allowable. Claim 16 depends from claim 15 and is allowable for at least the same reasons that claim 15 is allowable. Applicants respectfully request the rejection be withdrawn and the claims allowed.

Claims 17 and 18 stand rejected under 35 U.S.C. § 103(a) as being obvious over Smyers in view of U.S. Patent No. 6,850,938 to Sadjadi (“Sadjadi”), Bean and Abdelhadi. The rejection is respectfully traversed.

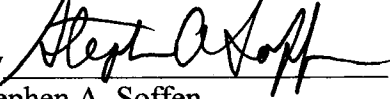
Claim 17 relates to a method of conflict detection in “a storage controller comprising a plurality of modules each capable of receiving host commands.” The method includes “determining whether said received access request corresponds to either a read or a write request to two or more storage elements of a volume identified in said received storage request.” As explained above, neither Smyers, Bean nor Abdelhadi teach the recited storage request. Additionally, Sadjadi fails to remedy the inadequacies of Smyers, Bean and Abdelhadi. Therefore, claim 17 is allowable over the cited combination. Claim 18, which depends from claim 17, is also allowable for at least the same reasons claim 17 was allowable. Applicants respectfully request the rejection be withdrawn and the claims be allowed.

In view of the above, Applicants submit that the present application is in condition for allowance, and such action is earnestly solicited. If there are any additional charges in connection with this filing or any subsequent filings (including but not limited to issue fees), the Examiner is

respectfully requested and authorized to charge Deposit Account No. 04-1073 therefor under Order No. A7995.0014/P014.

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Respectfully submitted,

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